APRIL/MAY 2024

FEL41 — ANALOG AND DIGITAL ELECTRONICS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

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1. What is CMRR?
2. Define Active filter.
3. What is positive feed back?
4. Write two advantages of multivibrator.
5. Convert 100.01_2 to decimal number.
6. Write commutative and associative law of Boolean expressions in AND form.
7. What is Multiplexer?
8. Draw the circuit diagram of D-Flip Flop and write logic truth table.
9. What is meant by resoultion of a DAC?
10. Draw the circuit diagram of Dual slope ADC.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Draw the pin and circuit diagram of an operational amplifier (IC 741).

Or

(b) Draw the circuit diagram and working of square wave generator using Op-Amp.

12. (a) Explain the Wien bridge oscillator and write the formula for frequency of oscillation.

Or

(b) Draw the circuit diagram of monostable multivibrator and explain it.

13. (a) Briefly describe universal logic gates with its truth table.

Or

(b) Simplify $(\overline{A} + B)(A + B)$.

14. (a) Explain the operation of an encoder circuit.

Or

(b) Draw the circuit diagram and explain the working of shift register.

15. (a) Explain the looking of digital to analog converter.

Or

(b) Describe the constructions and working of successive approximation in ADC.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write the short note on the following

(a) Adder

(b) Subtractor

(c) Integrator

(d) Differentiator

17. Draw the circuit diagram and explain the working of a Hartley oscillator.

18. Simplify the give 3-variable Boolean equation using K-map = $x'yz + x'y'z + xyz' + x'y'z' + xyz + xy'z'$.

19. Discuss the RS, clocked RS and JK Flip-Flops.

20. Draw the circuit diagram and Derive R-2R ladder network.

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